Appln. No. 09/863,199
Amendment & Response to Office Action filed 09/13/06
replying to Office Action of June 14, 2006

PATENT
Customer No. 22,852
Attorney Docket No. 07451.0034-00
Intertrust Ref. No. IT-36.1 (US)

REMARKS / ARGUMENTS

In response to the Office Action mailed June 14, 2006 ("the Office Action"),

Applicants respectfully propose that this application be amended as set forth above and

that the Examiner consider the following remarks. In the Office Action, the Examiner

objected to claims 1, 6, 7, 9, 11, and 12 due to informalities in the claim language. The

Examiner also rejected claims 1-17 under 35 U.S.C. § 103(a) as being unpatentable

over U.S. Patent No. 6,754,829 ("Butt") in view of U.S. Patent No. 6,591,231

("Kurshan"). By this response, claims 1, 6, 7, 9-12 and 17 have been amended to

obviate the Examiner's objections. After entry of this paper, claims 1-17 will be pending

in this application. Applicants hereby traverse the rejections of the pending claims.

Objection to Claims 1, 6, 7, 9, 11, and 12

Claims 1, 6, 7, 9, 11, and 12 stand rejected because of informalities in the claims.

In light of Applicants' amendments to the claims, Applicants respectfully request that the

Examiner withdraw the objections to these claims.

In addition to the corrections requested by the Examiner, Applicants have further

modified claims 1 and 7 to recite "updating the authorization value being a monotone

function," support for which may be found, for example, at page 16. Applicants have

also deleted the term "fixpoint" from claim 1 and replaced it with the term "steady state,"

support for which may be found, for example, on page 18 of the application.

Appln. No. 09/863,199
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Rejections Under 35 U.S.C. § 103(a)

The Examiner rejected claims 1-17 under 35 U.S.C. § 103(a) as unpatentable over Butt in view of Kurshan. Neither Butt nor Kurshan, however, teach or disclose all elements of Applicants' claims. Moreover, no motivation exists to combine the two references. Accordingly, Applicants hereby traverse these rejections.

Claims 1 and 7

The Examiner rejected claims 1 and 7 under 35 U.S.C. § 103(a) as unpatentable over Butt in view of Kurshan. Amended claim 1 now recites a step for updating authorization values that is "a monotone function" and a step for "repeating said evaluating and updating steps until a steady state of said lattice of authorizations values is reached." Similarly, claim 7 now recites computer code for updating authorization values as a "monotone function" and computer code "for updating the authorization value of one or more principals in the set of principals until a steady state of said lattice of authorization values is reached." Applicants submit that neither Butt nor Kurshan discloses at least these elements. Applicants further submit that no motivation exists to combine Butt with Kurshan.

Neither Reference Discloses All Elements of Applicants' Claimed Invention

Butt discloses a method for an operator of a console to manage a device without regard to the operating systems being used. *See* Butt, col. 2:27-28. In this method, an operator of a first operating system obtains a session certificate from a trusted core of a device having a second operating system. *See* Butt, col. 2:28-31. The operator then provides the session certificate, which authenticates the identity and group membership

Appln. No. 09/863,199
Amendment & Response to Office Action filed 09/13/06
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PATENT
Customer No. 22,852
Attorney Docket No. 07451.0034-00
Intertrust Ref. No. IT-36.1 (US)

of the operator, along with a management request to the device executing a third

operating system. *See* Butt, col. 2:31-35. This device will then use the certificate to

determine whether the authenticated operator has the necessary privileges to perform

the management request. *See* Butt, col. 2:35-38. If the certificate does indicate the

necessary privileges to perform the management request, the method may then check a

local access control list that may restrict otherwise valid operations. *See* Butt, col. 5:57-

60. Butt, however, fails to teach or suggest steps for "repeating said evaluating and

updating steps until a steady state of said lattice of authorizations values is reached" or

for updating authorization values that is "a monotone function" as recited in Applicants'

amended claim 1. Further, Butt fails to teach or suggest computer code for updating

authorization values as a "monotone function" or "for causing repeated execution of said

computer code for . . . updating the authorization value of one or more principals in the

set of principals until a steady state of said lattice of authorization values is reached" as

recited in Applicants' amended claim 7.

Kurshan fails to correct these deficiencies. Kurshan discloses a method for

checking constructivity, or acyclic behavior, in computer-aided circuit designs. *See,*

e.g., Kurshan, col. 1:5; col. 1:47-50; and col. 2:36-40. As part of the method, Kurshan

discloses a monotone function f on a complete partial order (CPO), the function f having

a monotone property P. *See* Kurshan, col. 6:37-38. As noted in Kurshan, monotonicity

implies the property whereby for u below v, the bottom of $f^*.u$ is below the bottom of f

$^*.v$. *See* Kurshan, col. 6:31-34. Thus, as used in Kurshan, the term monotonicity

involves comparing the two outputs of a function--$f^*.u$ and $f^*.v$--for two different inputs--

u and v. As used in Applicants' claims, however, the term monotone function is used to

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PATENT
Customer No. 22,852
Attorney Docket No. 07451.0034-00
Intertrust Ref. No. IT-36.1 (US)

describe a feature of each authorization value when processing one electronic request. For example, in a monotonically increasing function, once an authorization is granted by a principal, further processing by repeating the updating step for the one request will not indicate that the authorization should be denied by that principal. Likewise, in a monotonically decreasing function, once an authorization is denied by a principal, further processing by repeating the updating step for the one request will not indicate that the authorization should be granted by that principal. Thus, as used by Applicants, the term "monotone function" in this application describes a property of an authorization value when processing one input, not when processing two or more inputs. Accordingly, Kurshan fails to teach or suggest a step or computer code for updating the authorization values of the principals as a "monotone function" as recited in Applicants' amended claims 1 and 7.

Kurshan further fails to teach or suggest a method that reaches a steady state. Kurshan does disclose a lemma using least fixedpoints. *See* Kurshan, col. 6:37-38. According to Kurshan, the fixed points of f are partially ordered by the below symbol ($\sqsubseteq$) so that the least fixed point occurs below any other fixed point. *See* Kurshan, col. 6:40-43. Kurshan, however, uses the term "fix point" to describe a function f and value "v" where $f(\text{v}) = \text{v}$, (e.g. if $f(\text{x}) = \text{x}^2$, then x= 1 would be a fixpoint because $f(1) = 1$). *See* Kurshan, col. 6:40-41. Kurshan does not use the term fixpoint to describe a method or system that uses an iterative process to reach a steady state. Accordingly, Kurshan fails to teach or suggest steps for "<u>repeating</u> said evaluating and updating steps <u>until a steady state</u> of said lattice of authorizations values is reached" as recited in Applicants' amended claim 1. Kurshan further fails to teach or suggest computer code "for causing

Appln. No. 09/863,199
Amendment & Response to Office Action filed 09/13/06
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PATENT
Customer No. 22,852
Attorney Docket No. 07451.0034-00
Intertrust Ref. No. IT-36.1 (US)

repeated execution of said computer code for . . . updating the authorization value of one or more principals in the set of principals until a steady state of said lattice of authorization values is reached" as recited in Applicants' amended claim 7. For at least these reasons, Applicants submit that claims 1 and 7 are patentable over the cited prior art. Applicants, therefore, respectfully request that the Examiner withdraw the rejections of and allow claims 1 and 7.

> No Motivation Exists to Combine Butt with Kurshan

Applicants further submit that no motivation exists to combine the teachings of Butt with Kurshan. The Examiner must show that the prior art provides the reason or motivation to make the claimed combination. *See* MPEP § 2143. The prior art relied upon by an Examiner must either be in the field of Applicants' endeavor or reasonably pertinent to the particular problem with which the inventor was concerned. *See* MPEP § 2141.01. The motivation to combine the references cannot come from the applicant's own disclosure but must come from the prior art itself. *See* MPEP § 2143.

Applicants first note that the two motivations listed by the Examiner in the Office Action to modify the teachings of Butt involve two characteristics already present in Butt but not present in Kurshan. *See* Office Action p. 8. Specifically, Butt already discloses a system that determines "whether the authenticated operator has necessary access privilege to perform the management request based at least in part on the authenticated group membership of the operator set forth in the operating system independent session certificate." *Compare* Office Action, p. 8 *with* Butt, col. 2:36-40. Butt also already discloses "providing remote-access to manageable devices across different operating systems, and more specifically, to using certificates with embedded

Appln. No. 09/863,199
Amendment & Response to Office Action filed 09/13/06
replying to Office Action of June 14, 2006

PATENT
Customer No. 22,852
Attorney Docket No. 07451.0034-00
Intertrust Ref. No. IT-36.1 (US)

cryptographic data to validate operator identity and access rights to remotely manageable devices." *Compare* Office Action, p. 8 *with* Butt, col. 1:7-11. Applicants submit, however, that the Examiner does not show how these two features of Butt provide any motivation to modify the disclosure of Butt with the disclosure of Kurshan.

Applicants further submit that the art disclosed in Kurshan is neither in the Applicants' field of endeavor nor reasonably related to the pertinent problem addressed by Applicants. Kurshan generally discloses a method for identifying cyclicity in circuit designs, while Applicants' present claims involve systems and methods for making trust management decisions. Accordingly, Applicants respectfully submit that circuitry design is not within the general field of endeavor of the present application. Applicants also submit that a person faced with the issues of monotone functions and arriving at a steady state in a trust management system would not look to Kurshan, which involves preventing cyclicity and feedback loops from occurring in computer-aided circuit designs. Accordingly, Applicants respectfully submit that the teachings of Kurshan would not be within the knowledge of one skilled in the art of trust management systems. For these reasons, Applicants submit that one skilled in the art of trust management systems and faced with the same problems as Applicants would not be motivated to look to Kurshan for a solution or to combine Butt with Kurshan.

Claim 2

The Examiner also rejected claim 2 under 35 U.S.C. § 103(a) as unpatentable over Butt in view of Kurshan. Claim 2, which depends from claim 1, recites a step for "constructing a dependency graph . . . containing a node corresponding to each principal in the set of principals; and assigning at least two nodes in the dependency

Appln. No. 09/863,199
Amendment & Response to Office Action filed 09/13/06
replying to Office Action of June 14, 2006

PATENT
Customer No. 22,852
Attorney Docket No. 07451.0034-00
Intertrust Ref. No. IT-36.1 (US)

graph with a certificate that expresses a dependency of one node on the state of another node." In addition to the missing elements from claim 1, Applicants further submit that neither Butt nor Kurshan discloses or suggests at least this additional element of claim 2.

As stated above, Butt discloses a method for an operator of a console to manage a device without regard to the operating systems being used. *See* Butt, col. 2:27-28. In Butt, the certificate authority issues operating system independent certificates to operators of consoles to be used to authenticate the identity and group membership of the console operator. *See* Butt, col. 5:48-51. The certificate is then checked against the access control list to determine if access should be granted. *See* Butt, col. 5:58-60. Butt, however, does not disclose that the current entries on the access control list depend on the state of other entries of the access control list, nor does Butt describe a dependency graph. Additionally, the section of Butt cited to by the Examiner (Butt, col. 11:43-67) describes a method for allowing a core to act as a proxy for the console operator. *See* Butt, col. 11:26-27. In describing this proxy configuration, however, Butt does not disclose that the entries on the access list of the manageable device will depend on the current entries on the access control list, nor does this section describe or suggest the use of a dependency graph. Accordingly, in addition to the failure to teach or suggest all elements of claim 1, Butt also at least fails to teach or suggest a step for "constructing a dependency graph . . . containing a node corresponding to each principal in the set of principals; and assigning at least two nodes in the dependency graph with a certificate that expresses a dependency of one node on the state of another node" as recited in Applicants' claim 2.

Appln. No. 09/863,199
Amendment & Response to Office Action filed 09/13/06
replying to Office Action of June 14, 2006

PATENT
Customer No. 22,852
Attorney Docket No. 07451.0034-00
Intertrust Ref. No. IT-36.1 (US)

Kurshan fails to remedy this deficiency. As noted by the Examiner, Kurshan does disclose a dependency graph in the Background of the Invention section of the patent, but in doing so, Kurshan teaches using the dependency graph to describe or specify one or more gates in a circuit design. *See* Kurshan col. 1:6-10. Kurshan, however, fails to teach or suggest using a dependency graph in a system or method for making trust management decisions in which the nodes of the dependency graph correspond to principals. Accordingly, in addition to the failure to teach or suggest all elements of claim 1, Kurshan also at least fails to teach or suggest a step for "constructing a dependency graph . . . containing a node corresponding to each principal in the set of principals; and assigning at least two nodes in the dependency graph with a certificate that expresses a dependency of one node on the state of another node" as recited in Applicants' claim 2. For at least the reasons listed in connection with claims 1 and 2, Applicants submit that claim 2 is patentable over the cited prior art. Applicants, therefore, respectfully request that the Examiner withdraw the rejection of and allow claim 2.

Claim 3

The Examiner rejected claim 3, stating, "This claim has limitations that is similar to those of claim 1, thus it is rejected with the same rationale applied against claim 1 above." *See* Office Action, p. 9. Applicants, however, submit that in addition to not disclosing all elements of amended claim 1, neither Butt nor Kurshan discloses or suggests a method "in which said updating is performed after all of the certificates have been evaluated" as cited in Applicants' claim 3.

Appln. No. 09/863,199
Amendment & Response to Office Action filed 09/13/06
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PATENT
Customer No. 22,852
Attorney Docket No. 07451.0034-00
Intertrust Ref. No. IT-36.1 (US)

As stated above in connection to claims 1 and 2, Applicants submit that Butt fails to disclose a trust management system in which the entries on the access list of the manageable device will depend on the current entries on the access control list. Additionally, because the entries on the access list are not disclosed as changing, Butt also does not disclose a step for updating the entries on the access list. Accordingly, in addition to failing to disclose all elements in amended claim 1, Butt fails to teach or suggest a method "in which said updating is performed after all of the certificates have been evaluated" as cited in Applicants' claim 3.

Kurshan fails to remedy this deficiency. As stated above in connection with claims 1 and 2, Kurshan fails to disclose a system in which an iterative process is used to update authorization values of one or more principals in a computer implemented authorization system. Accordingly, in addition to failing to disclose all elements in amended claim 1, Kurshan further fails to teach or suggest a method "in which said updating is performed after all of the certificates have been evaluated" as cited in Applicants' claim 3. Applicants submit that claim 3 is patentable over the cited prior art for at least the reasons listed for claims 1 and 3. Applicants, therefore, respectfully request that the Examiner withdraw the rejection of and allow claim 3.

Claims 4-6

Claims 4-6 depend from and include all limitations of Applicants' amended claim 1 and are patentable for at least the reasons listed above for amended claim 1. Applicants, therefore, respectfully request that the Examiner withdraw the rejections of claims 4-6 and allow these claims.

-18-

Appln. No. 09/863,199
Amendment & Response to Office Action filed 09/13/06
replying to Office Action of June 14, 2006

PATENT
Customer No. 22,852
Attorney Docket No. 07451.0034-00
Intertrust Ref. No. IT-36.1 (US)

Claim 8

Claim 8 depends from and includes all limitations of Applicants' amended claim 7. Accordingly, claim 8 is patentable for at least the reasons listed above for amended claim 7. Applicants, therefore, respectfully request that the Examiner withdraw the rejection of and allow claim 8.

Claim 9

The Examiner rejected claim 9 as unpatentable over Butt in view of Kurshan. As discussed above in connection with claims 1 and 7, Applicants submit that neither Butt nor Kurshan discloses or suggests "creating a lattice of monotone authorization values" as recited in Applicants' amended claim 9. Additionally, Applicants submit that neither Butt nor Kurshan discloses or suggests at least "identifying a root principal from whom authorization is needed in order to grant the request" nor does either reference disclose "performing at least a portion of a least fixpoint computation over said authorization values" as recited in Applicants' amended claim 9.

Butt discloses a system and method that "checks the account information embedded in the certificate to the access control list governing access to the requested feature." See Butt col. 4:18-20. Butt fails to disclose a method or system for identifying an entry in the access control list from whom authorization is needed. Further, as stated earlier by Applicants when discussing claim 1, Butt fails to disclose a method or system in which the entries on the access control list are updated. Accordingly, Butt fails to teach or suggest "identifying a root principal from whom authorization is needed in order to grant the request" and "performing at least a portion of a least fixpoint computation over said authorization values" as recited in Applicants' amended claim 9.

Appln. No. 09/863,199
Amendment & Response to Office Action filed 09/13/06
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PATENT
Customer No. 22,852
Attorney Docket No. 07451.0034-00
Intertrust Ref. No. IT-36.1 (US)

Kurshan fails to remedy this defect. Because Kurshan does not disclose the use of access lists, Kurshan likewise fails to disclose a method or system in which the entries of the access list, including a root principal, are updated. Further, Kurshan discloses a method for using the least fixed point in a method for identifying cyclicity in a circuit design. *See* Kurshan col. 6:40-45. As used by Kurshan, a fixed point is defined as a value "v" such that for a function f, $f(v) = v$. *See* Kurshan col. 6:40-41. Thus, Kurshan uses the term fixed point to indicate discrete values or vectors that have this property. Applicants, however, use the term "fixed point" to describe a system in which no further processing is required. Accordingly, Kurshan fails to teach or suggest "identifying a root principal from whom authorization is needed in order to grant the request" and "performing at least a portion of a least fixpoint computation over said authorization values" as recited in Applicants' amended claim 9. For at least these reasons, Applicants respectfully submit that claim 9 is patentable over the cited prior art and respectfully request that the Examiner withdraw the rejection of and allow claim 9.

Claim 10

The Examiner also rejected claim 10 as unpatentable over Butt in view of Kurshan. As discussed above in connection with claims 1, 7, and 9, Applicants submit that neither Butt nor Kurshan discloses "creating a lattice of <u>monotone</u> authorization values" as recited in Applicants' amended claim 10. Additionally, as discussed above in connection with claim 9, Applicants also submit that neither Butt nor Kurshan discloses "performing least fixed point computations using said authorization values" as recited in Applicants' amended claim 10. Finally, as discussed above in connection with claim 1 and 7, Applicants respectfully submit that no motivation exists for Butt to be combined

Appln. No. 09/863,199
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PATENT
Customer No. 22,852
Attorney Docket No. 07451.0034-00
Intertrust Ref. No. IT-36.1 (US)

with Kurshan as proposed by the Examiner. For at least these reasons, Applicants respectfully submit that claim 10 is patentable over the cited prior art and respectfully request that the Examiner withdraw the rejection of and allow claim 10.

Claims 11-16

Claims 11-16 depend from and include all limitations of amended claim 10 and are patentable for at least the reasons listed above for amended claim 10. Applicants, therefore, respectfully request that the Examiner withdraw the rejections of claims 11-16 and allow these claims.

Claim 17

The Examiner rejected claim 17 as unpatentable over Butt in view of Kurshan for essentially the same reasons as listed for rejecting claim 10. As discussed above in connection with claims 1, 7, and 9, however, Applicants submit that neither Butt nor Kurshan teaches or suggests "defining said authorization values in said certificates using monotone authorization values" nor does either cited reference teach or suggest "computing a fixpoint, or an approximation thereof" as recited in Applicants' claim 17. Applicants, therefore, respectfully submit that claim 17 is patentable over the cited prior art for at least these reasons and request that the Examiner withdraw the rejection of and allow claim 17.

Appln. No. 09/863,199
Amendment & Response to Office Action filed 09/13/06
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PATENT
Customer No. 22,852
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CONCLUSION

Please grant any extensions of time required to enter this response and charge

any additional required fees to our Deposit Account No. 06-0916.

Respectfully submitted,

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Dated: September 13, 2006

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